

FFAG magnet parameters:

There are only two magnets:

Dipole magnet (combine function magnet):

Length 1.6 meters

Bending field: 5.2 T

Central part of the dipole ± 0.4 m, has defocusing quadrupole field with gradient GDD1= 41 T/m

Focusing quadrupole (combine function magnet):

Length: 0.55 meters

Quadrupole gradient: 38.309428 T/m

Bending field in opposite direction: 2.800470393 T

Orbit offsets:

@ 9.45 GeV $X_{co}=-55$ mm

@ 20.0 GeV $X_{co}=68$ mm

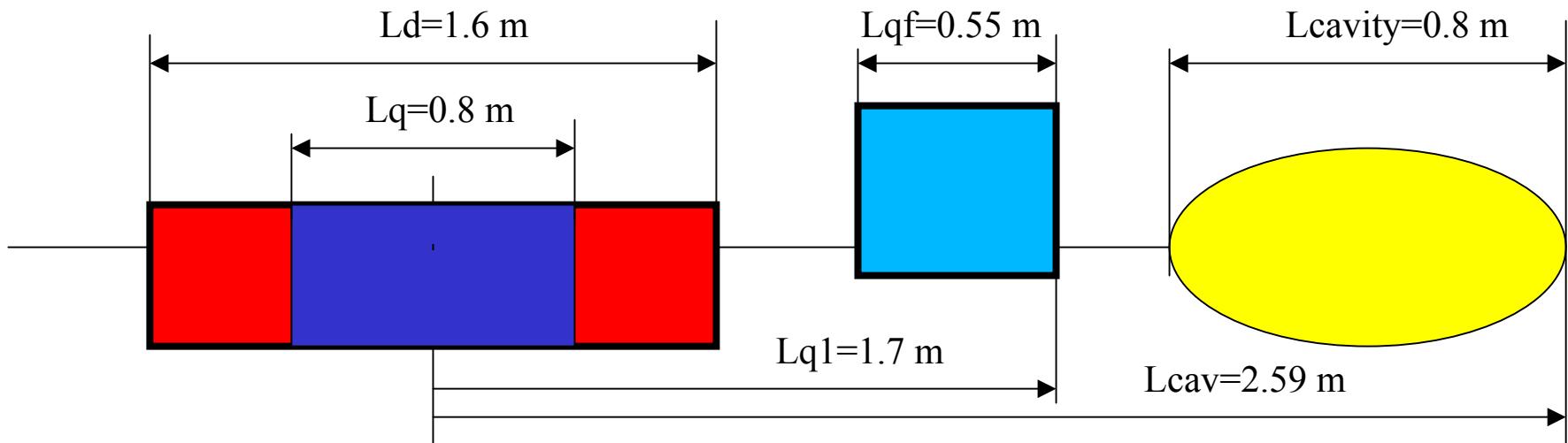
Beam sizes in mm:

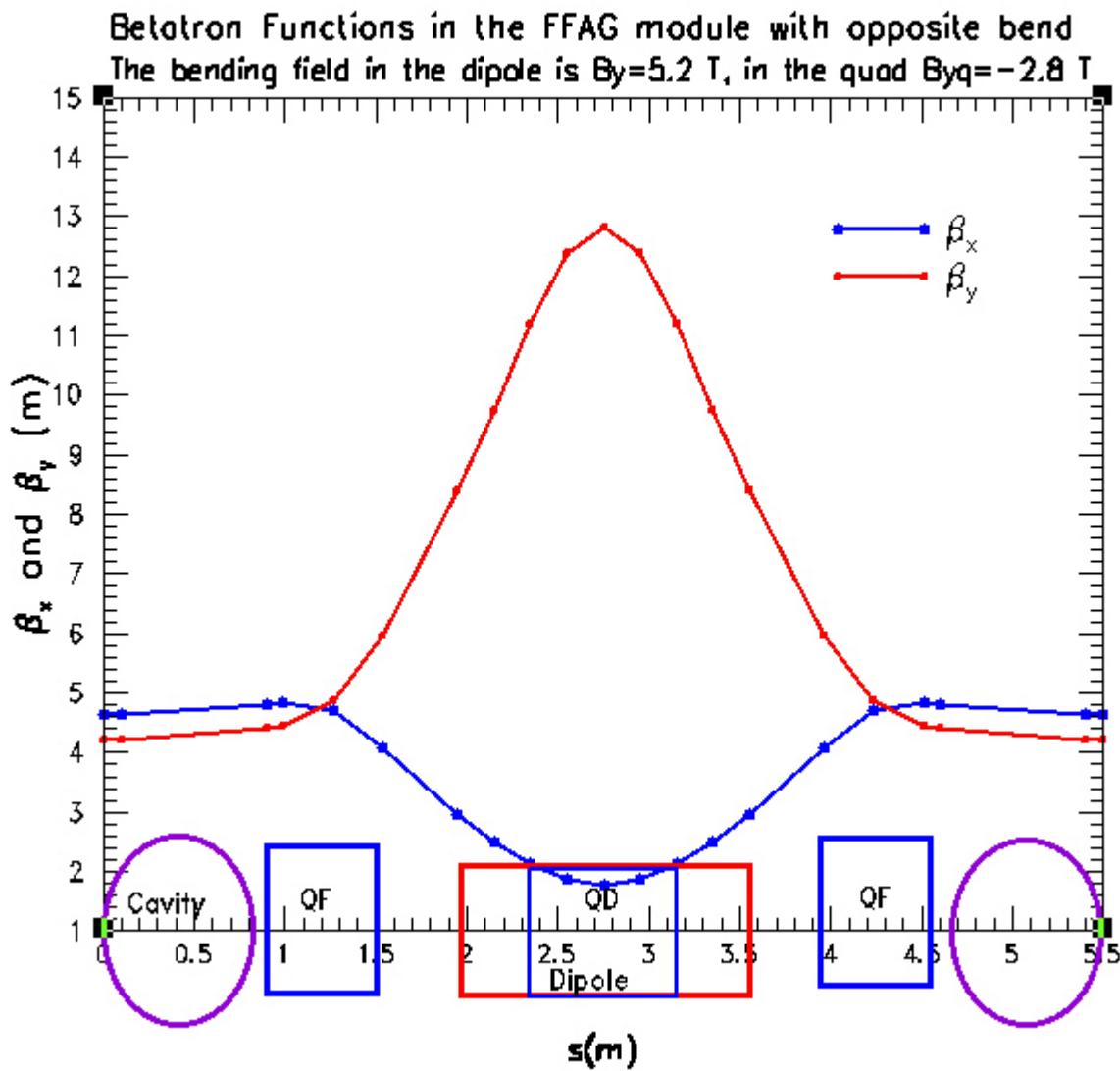
$\sigma(9.45 \text{ GeV}) = 15.8 \text{ mm}$

$\sigma(20.0 \text{ GeV}) = 10.9 \text{ mm}$

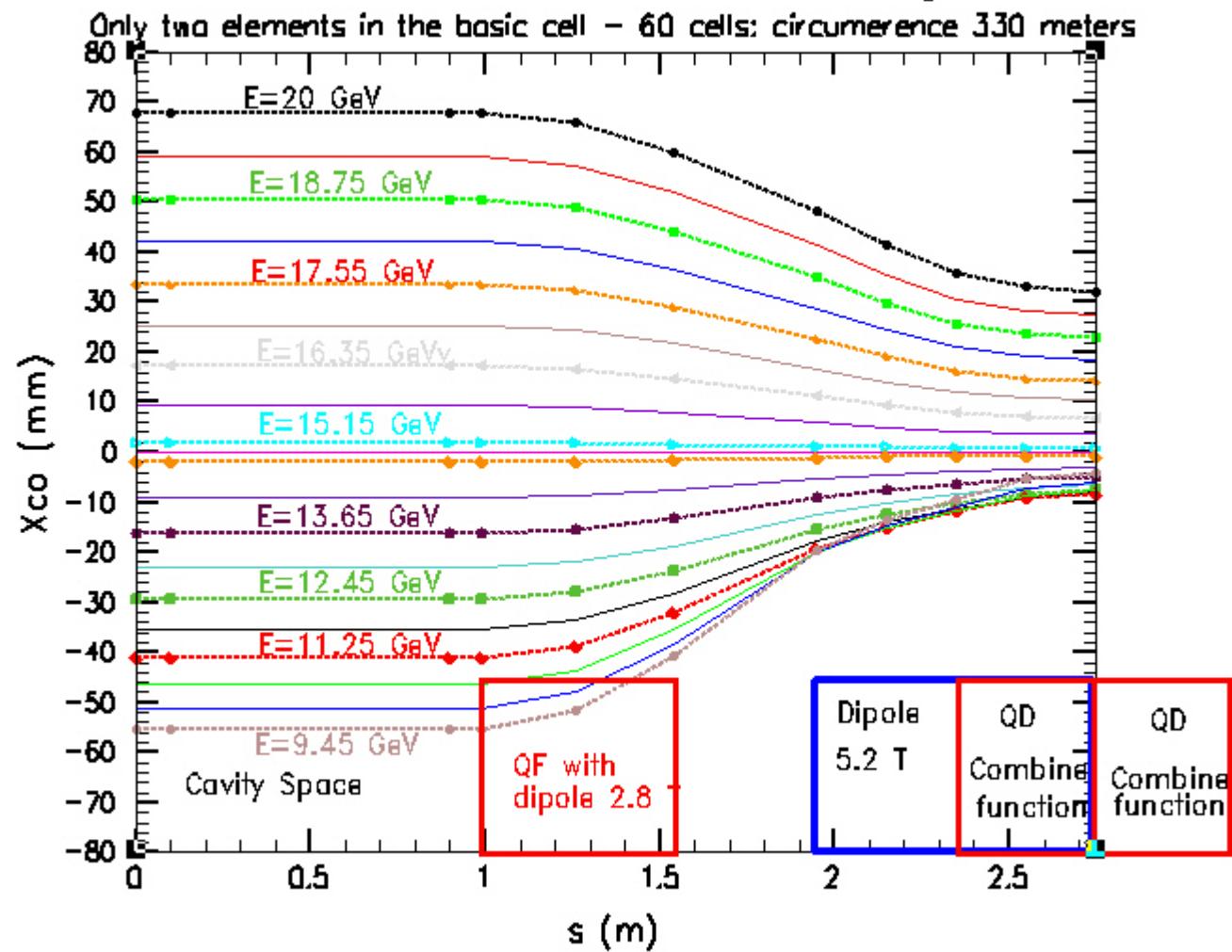
$By=2.8+38.3*0.070= 5.5$

$By \sim 7 \text{ T}$





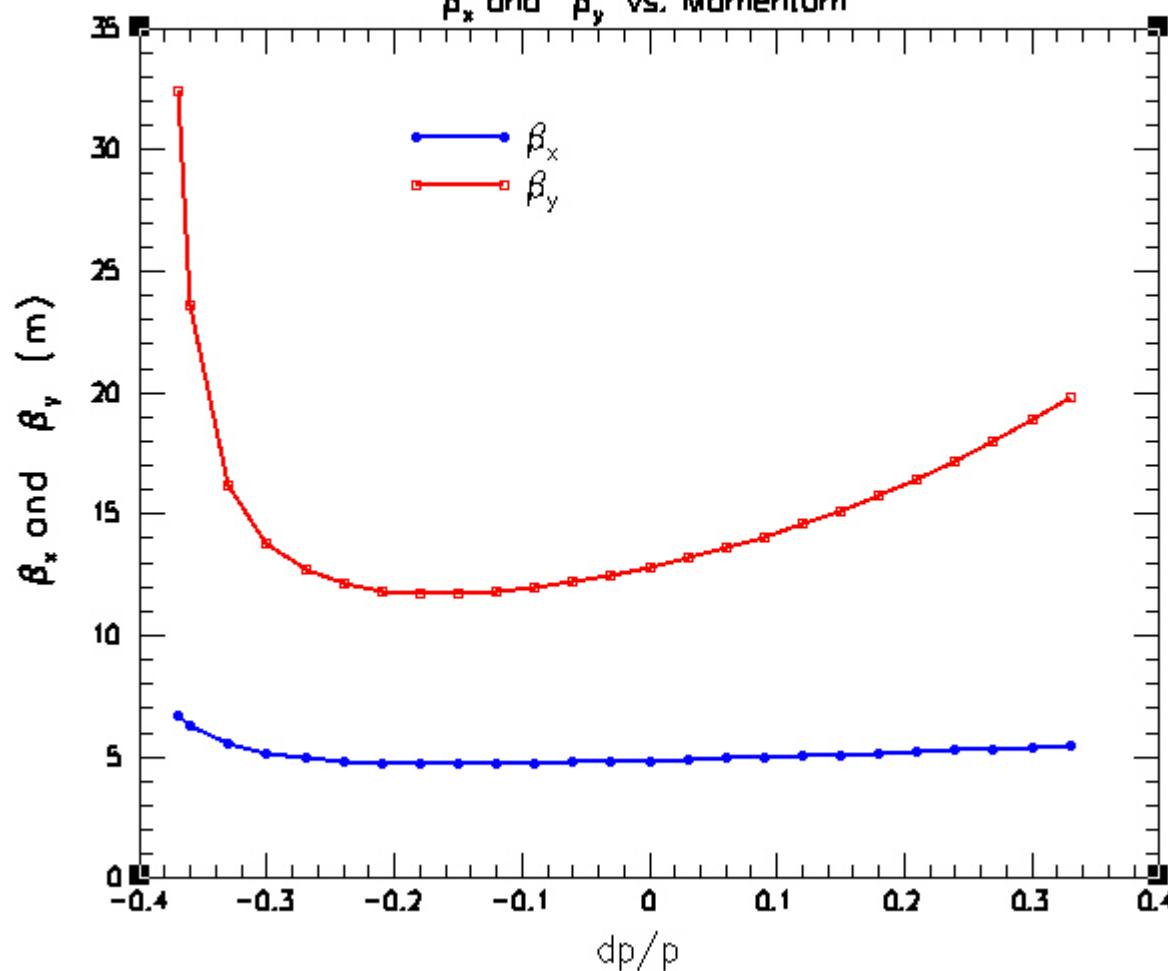
FFAG Minimum Emittance Lattice – Orbits during acceleration





FFAG Minimum Emittance Lattice

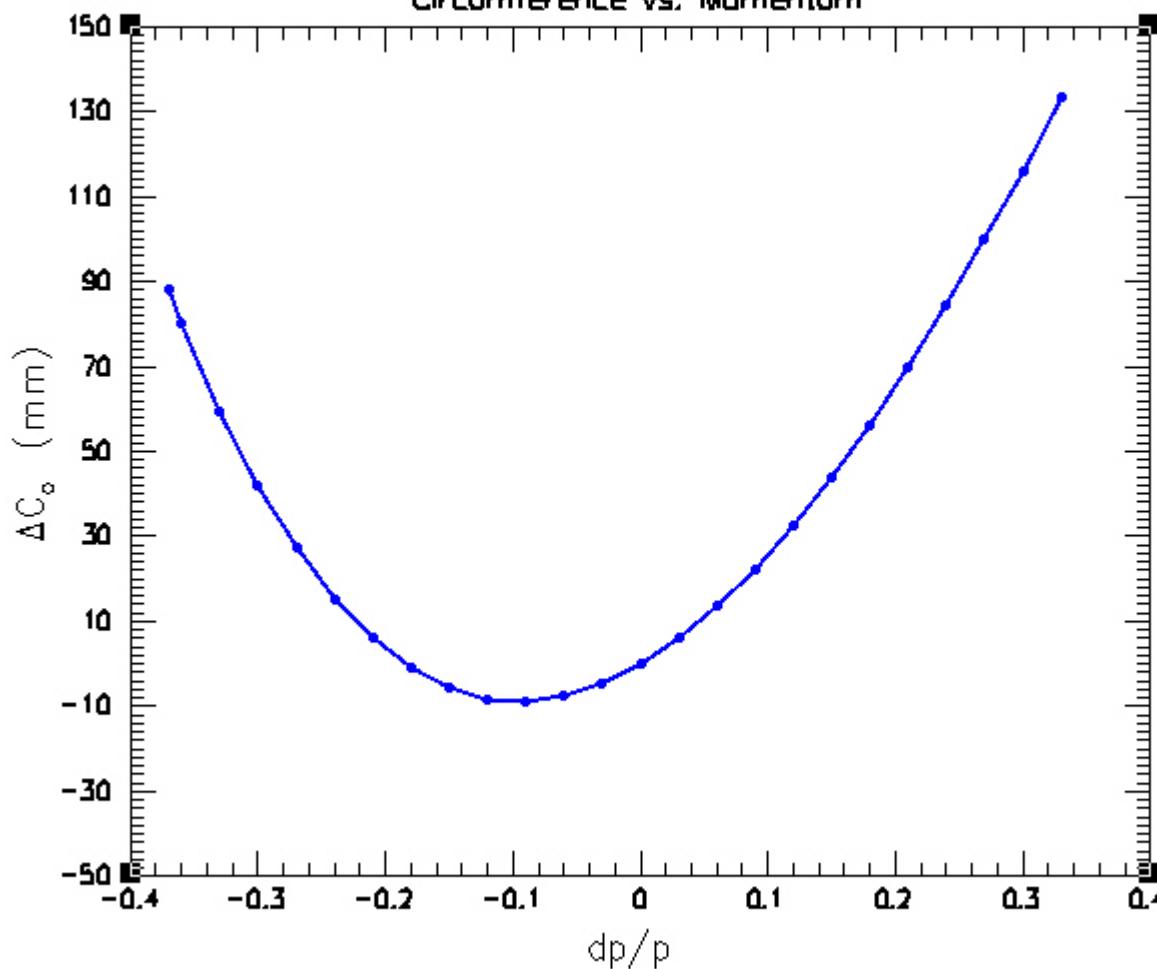
β_x and β_y vs. Momentum





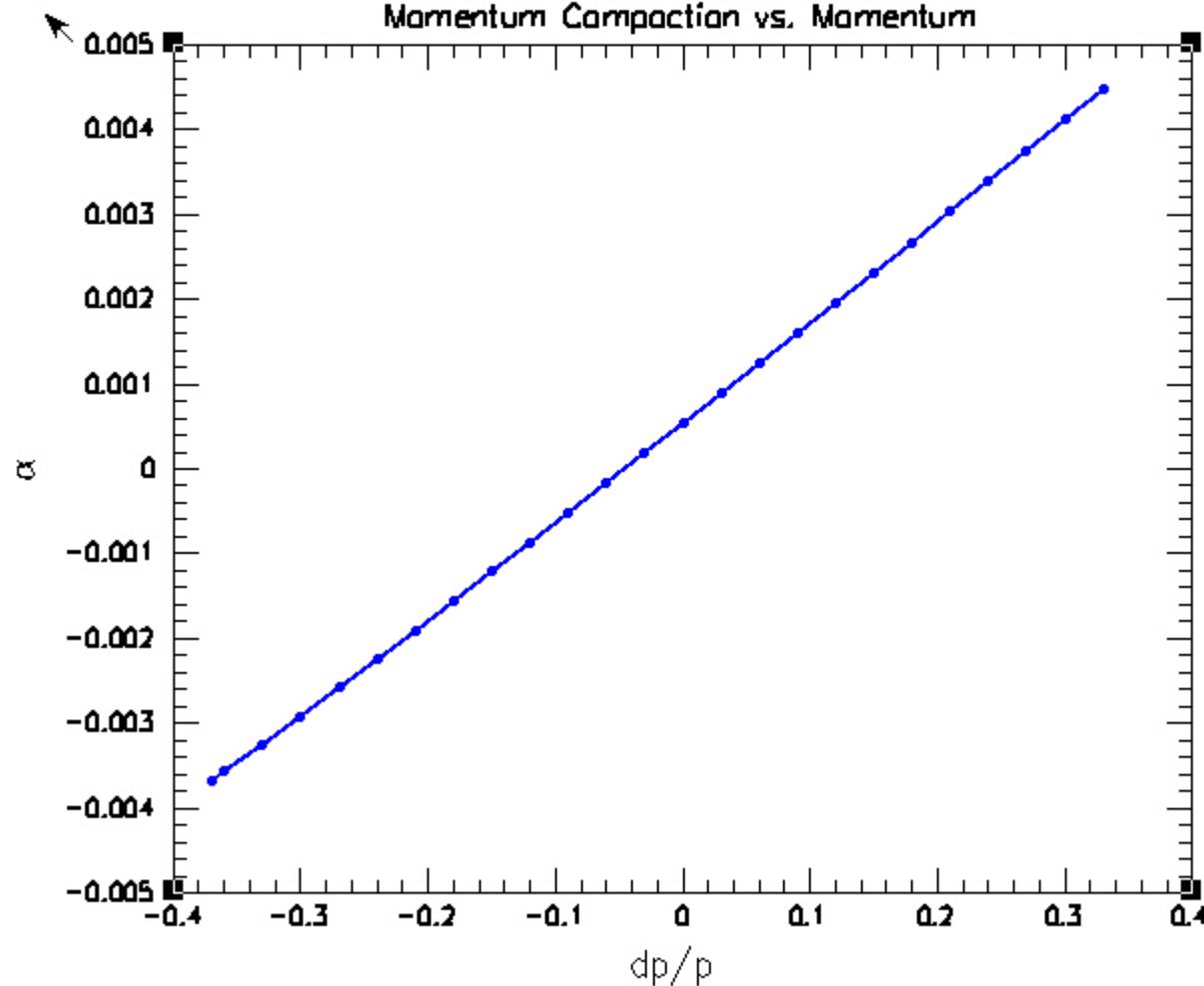
FFAG Minimum Emittance Lattice

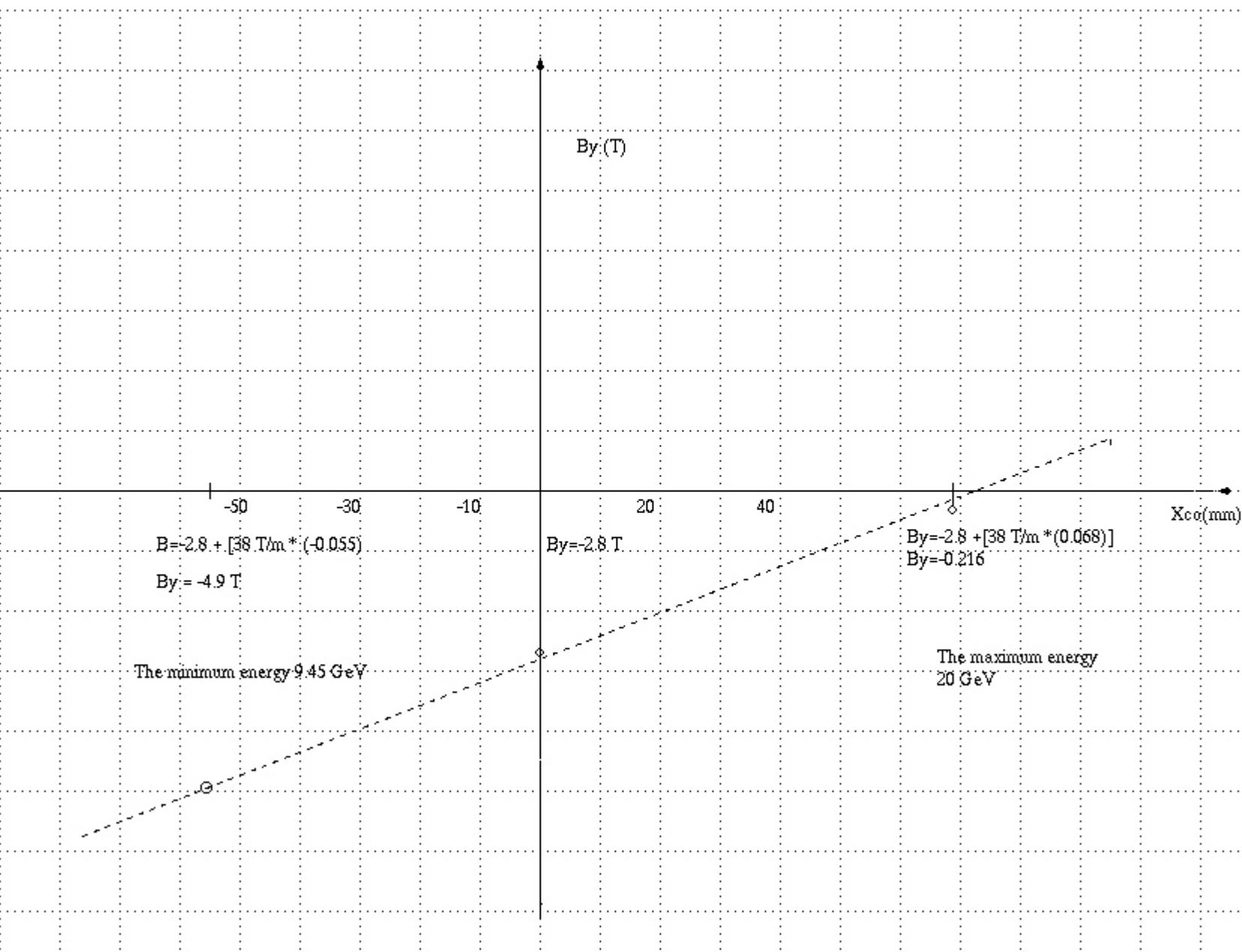
Circumference vs. Momentum



FFAG Minimum Emittance Lattice

Momentum Compaction vs. Momentum







FFAG Minimum Emittance Lattice

Betatron tunes in the basic cell vs. Momentum

